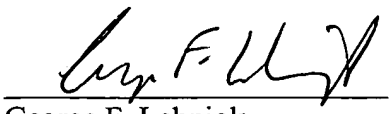
Preliminary Amendment

REMARKS

Entry and consideration of this Amendment is respectfully requested.

Respectfully submitted,



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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 1, first paragraph: This is a Continuation of International Applications PCT/DE99/03041 and PCT/DE99/03038, each with an international filing date of September 22, 1999, which were published under PCT Article 21(2) in German, and the disclosures of which are incorporated into this application by reference.

Page 2, Delete the entire 2nd full paragraph: [To be able to use certain monitoring mechanisms that make it possible specifically to decouple faulty segments from the network, information on the extent of the network is required in the coupling devices.]

Page 3, paragraph 1: To attain these and other objects, according to one formulation of the invention, the new network is divided into several segments interconnected by at least one coupling device. The coupling device has means for measuring the predefined slot time in the users by means of so-called GAP queries with which the active users using the PROFIBUS DP protocol for data transmission cyclically check whether new users have been connected to the network, wherein the slot time is the time for which an active user waits after a GAP query for a reply message from a polled user. [The new coupling device has means for measuring the predefined slot time in the users by means of so-called GAP queries with which active users using the PROFIBUS DP protocol for data transmission cyclically check whether new users have been connected to the network, wherein the slot time is the time for which an active user waits after a GAP query for a reply message from a polled user].

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Page 4, 1st full paragraph: The invention offers the advantage that coupling devices are capable of independently measuring during operation of the network the slot time which is parameterized in the users and contains direct information on the extent of the network. The coupling devices can readily deduce from this information at which point in time after a poll message with acknowledge, no messages remain in the network. Since the coupling device automatically records information regarding the extent of the network, a corresponding parameterization of the coupling device is not required when the network is configured.

Page 5, 2nd paragraph: Delete the entire paragraph: [The invention has the further advantage that dynamic interference, e.g., short spikes, as well as continuous disturbances coupled into a segment of a network do not negatively affect the transmission capacity of other segments of the same network. Segmentation, in which the forwarding of faulty messages from a faulty segment to neighboring segments is blocked, is a simple way to prevent the propagation of faults over several segments.]

Page 13, last paragraph: Figure 3 shows only the last three bits, two data bits 31 and 32 and a stop bit 33, of a message that corresponds to the PROFIBUS DP protocol. To stop bit 33 a further stop bit 34 is appended, which is followed by five bits 35 ... 39 of a CRC character. Downward pointing arrows above the individual bits indicate the scanning instants at which the signal value is scanned in the receiver. After the last bit 39, an idle state occurs corresponding to the indicated level 40 for the duration of the subsequent transmission pause.

Page 39, 1st paragraph: Advantageously, the coupling devices 221 ... 226 measure the slot time during operation of the network. The slot time contains information on the extent of the

network so that costly parameterization of the coupling devices regarding the network extent may be eliminated. The slot time T_s is parameterized in the users as follows:

[[See source for equation]] $$T_S = T_{SM} + 2\,(L_{ges} * 5\,\frac{\mu s}{km} + 2\,N_K * V_K + Tsdx + 20\,T_{Bit})$$

with

T_s – slot time,

T_{SM} – a safety margin,

L_{ges} – sum of the lengths of the segments with optical signal transmission,

N_K – number of coupling devices,

V_K – signal propagation time through a coupling device,

Tsdx – maximum delay time after which a polled user must reply to a poll message, and

T_{Bit} – the time of one bit at the correspondingly set data rate.

IN THE CLAIMS:

Claims 19-35 are canceled.

Claims 36-63 are added as new claims.

The claims are amended as follows:

1. (Amended) A network with a plurality of users, comprising: [which is divided into several]

a plurality of segments [interconnected by]; and

at least one coupling device operable to connect the plurality of segments, [,characterized in that the at least one coupling device has means for]

the at least one coupling device including a measuring device for measuring [the] a predefined slot time in the users [by means of so-called] using GAP queries with which [the] active users using [the] a PROFIBUS DP protocol for data transmission cyclically check whether new users have been connected to the network [,wherein the slot time is the time for which an active user waits after a GAP query for a reply message from a polled user].

2. (Amended) The network as claimed in Claim 1, [characterized in that] wherein at least one active user is configured [in such a way that it executes] to execute cyclical GAP queries to a non-existent user.

3. (Amended) The network as claimed in Claim 1, [characterized in that] wherein the predefined slot time [predefined] in the users is at least twice the time that elapses at maximum in an optical double ring between sending a GAP query message and receiving a reply message.

4. (Amended) [The] A network with a plurality of users [as claimed in Claim 1, characterized in that] wherein the network is divided into [at least three] a plurality of segments with bidirectional data transmission, wherein a first segment and a second segment of the plurality of segments are interconnected by a first coupling device, and wherein the second segment and a third segment of the plurality of segments are interconnected by a second coupling device [, that the first coupling device has means for detecting any corruption of a message through faults on the second segment and after detection of a fault to block the

forwarding to the first segment of messages received in the second segment, and that the second coupling device has means to block the forwarding to the third segment of messages received in the second segment upon detection of a block of the forwarding of messages by the first coupling device] ,wherein the first coupling device includes a detecting device and a blocking device for detecting corruption of a message through faults on the second segment and, after detection of a fault, to block the forwarding to the first segment of messages received in the second segment, and the second coupling device includes a detecting device and a blocking device to block the forwarding to the third segment of messages received in the second segment upon detection of a block of the forwarding of messages by the first coupling device.

5. (Amended) The network as claimed in Claim 4, [characterized in that] wherein the blocking device of the first coupling device [has means for blocking] blocks the forwarding of messages to the second segment upon detection of a fault in the second segment for at least a [predefined time, the so-called] minimum segmentation time, and [that] the second coupling device [has] includes a monitoring device for monitoring transmission activities on the second segment, which checks compliance with a maximum idle time on the second segment, [which preferably is half the measured slot time,] and if the maximum idle time is exceeded, blocks the forwarding to the third segment of messages received on the second segment [, and that the minimum segmentation time is greater than the maximum idle time].

6. (Amended) The network as claimed in Claim 4, [characterized in that] wherein forwarding of messages by the first coupling device is blocked only after determination of a predefined number of errors.

7. (Amended) The network as claimed in Claim 4, [characterized in that the means for detecting message corruption are configured such that an error is detected] wherein the detecting device detects corruption if a signal level in a received message persists longer than a predefined time.

8. (Amended) The network as claimed in Claim 7, [characterized in that] wherein the detecting device detects the corruption [an error is detected] if in a received message, the signal level remains on a low level for 13 consecutive bit times.

9. (Amended) The network as claimed in Claim 4, [characterized in that the means for detecting message corruption are configured such that] wherein the detecting device detects corruption [an error is detected] if more than a predefined number of characters are contained in a received message.

10. (Amended) The network as claimed in Claim 9, [characterized in that an error is detected if more than 262 characters are contained in a received message] wherein the predefined number of characters is 262.

11. (Amended) The network as claimed in Claim 4, [characterized in that] wherein the second coupling device [has means for supplementing] supplements a message to be forwarded from the third segment to the second segment, irrespective of possibly present control information valid on the third segment, by control information valid on the second segment, which is adapted to the message sent on the second segment, so that the first coupling device connected to the second segment can evaluate the control information to assess [the] a transmission quality on the second segment.

12. (Amended) The network as claimed in Claim 11, [characterized in that] wherein the first coupling device [has means for generating] generates control information for a message received on the second segment, [comparing] compares the generated control information with the received control information, and [indicating] indicates an error in case of a mismatch between the [two] received control information and the generated control information.

13. (Amended) The network as claimed in Claim 12, [characterized in that] wherein the blocking device of the first coupling device [has means for blocking] blocks the forwarding to the third segment of the [messages] message received on the second segment in case of a mismatch between the [two] received control information and the generated control information.

14. (Amended) The network as claimed in Claim 11, [characterized in that] wherein the control information is a CRC (Cyclic Redundancy Check) character.

15. (Amended) The network as claimed in Claim 14, [characterized in that] wherein the CRC character comprises 5 bits.

16. (Amended) The network as claimed in Claim 14, [characterized in that] wherein the second coupling device [has means for supplementing] supplements the message by an additional stop bit and sending the control information immediately after the additional stop bit.

17. (Amended) The network as claimed in Claim 4, [characterized in that] wherein the blocking device of the second coupling device [has means for unblocking] unblocks the forwarding if a check of [the] transmission quality on the second segment by special messages transmitted via the second segment from the first coupling device to the second coupling device and vice versa shows good transmission quality.

18. (Amended) The network as claimed in Claim 17, [characterized in that] wherein the first and the second coupling [device] devices include a checking device [have means] for performing a handshake procedure to check the transmission quality on the second segment by special messages in which,

(a) the first coupling device, after expiration of the minimum segmentation time, sends a first special message [(ST1)] via the second segment to the second coupling device;

(b) the second coupling device in case of error-free receipt of the first special message [(ST1)] returns a second special message [(ST1)] via the second segment to the first coupling device,

(c) the first coupling device in case of error-free receipt of the second special message [(ST1)] sends a third special message [(ST2)] via the second segment to the second coupling device, and

(d) the second coupling device in case of error-free receipt of the third special message [(ST2)] returns a fourth special message [(ST2)] via the second segment to the first coupling device, and

[that means are present for reinitiating] the checking device re-performs the handshake procedure if [the] a time between sending [a] the first special message and receiving [a] the returned second special message is greater than a predefined maximum time.